

**The Naval Safety Center in
conjunction with the
Occupational Safety and
Health Administration
(OSHA) are participating in
the “National Safety Stand-
Down to Prevent Fall in
Construction”***

***A's campaign is focused on the Construction Industry.
Navy/Marine Corps
participating and providing Fall Protection Awareness in all
of the Naval Enterprise.***

Aviation Fall Protection

Stats

FALLS FROM AIRCRAFT						
T/M/S	2012	2013	2014	2015	2016	Grand Total
MV-22B		1	6	1		8
F/A-18F	2	1		1		4
MH-60S	1		1	1	1	4
MH-60R	1			2		3
SH-60B		2	1			3
UNKNOWN	2			1		3
F/A-18C	1	1	1			3
EA-18G			1	1		2
E-2C+		1		1		2
MH-53E	1	1				2
CH-53E			1	1		2
EA-6B	2					2
CH-46E		1				1
F/A-18A+		1				1
E-2C		1				1
P-3C			1			1
HH-60H		1				1
KC-130T			1			1
C-2A				1		1
F/A-18E		1				1
Grand Total	10	12	13	10	1	46

Stats

FY	LOST WORK DAYS
2012	199
2013	149
2014	148
2015	101
2016	1
Grand Total	598

FY	LIGHT/LIMITED DAYS
2012	87
2013	109
2014	163
2015	122
2016	0
Grand Total	481

FY	HOSPITAL DAYS
2012	2
2013	1
2014	5
2015	33
2016	0
Grand Total	41

Naval Safety Center Squadron Survey results 2015

- More than 85% of all aviation units surveyed in the past 12 months do not have an established Fall Protection Program.

Specifically:

- Lacking written policy, applicable instructions, and SOPs
- Fall Protection Program manager not assigned
- Awareness training not being conducted
- Lacking suitable warnings, markings, placards, signs and notices
- Workplace Survey and Assessment of Fall Hazards not conducted
- Failure to conduct deliberate ORM with consideration to
 - Competent person not assigned
 - Maintenance or inspection work duration
 - Environmental factors such as wind, rain, snow, or ice
 - Probability of fall
 - Hazards of fall (obstacles, height, etc.)
 - Slippery materials or substances on aircraft surfaces

REQUIREMENT FOR A WRITTEN FALL PROTECTION PROGRAM

- OPNAVINST 5100.23 Series, Chapter 13, and Chapter 3 of the DON Fall Protection Guide (May 2015) require all commands to develop a written Fall Protection program.
- This written program must be site specific and tailored to the individual command's equipment and requirements based on the hazard assessment.
- The command policy should contain two appendices.
 - Appendix one should be the Fall Hazard Survey
 - Appendix two should be the Fall Protection and Prevention Plan.
- Paragraph 15.9 of this Fall Protection Guide includes a template more specific to aviation that the commands can tailor to their needs.

DUTIES AND RESPONSIBILITIES

Aviation Squadron Fall Protection Program Manager (Aviation FPPM)

IAW the Fall Protection Guide (Paragraph 15.9)

- “At a minimum the command shall have a designated Fall Protection Program manager”.
- a) “The Aviation FPPM shall ensure that personnel exposed to fall hazards and other personnel involved in the program receive adequate training as outlined in appendix A of reference (a). Aviation FPPMs may contact their TYPE WING Safety Offices for information on possible Aviation FPPM training options.
- “Designation of Aviation (FPPM) to oversee the administrative requirements, equipment selection, and inspection aspects of the program- this responsibility should be assigned to the command Safety Officer, however this position may be assigned to an E-6 or above” (Preferably Quality Assurance Representative with appropriate training

DUTIES AND RESPONSIBILITIES

(cont.)
(para 15.6 c))

- **Competent Person for Fall Protection.** “A person designated in writing by the Commanding Officer to be responsible for the immediate supervision, implementation and monitoring of the fall protection program., who is capable of identifying, evaluating and addressing existing and potential fall hazards, and in the application and use of personal fall protection and rescue system or any component thereof, and has the authority to take prompt corrective measures to eliminate or control the hazards of falling. To be trained to the Competent Person level, personnel must attend a Competent Person training course as approved by ECHELON II (USFF, CPF or NAVAIR); the training shall be in accordance with reference (a) requirements.”

WORKPLACE SURVEY AND ASSESSMENT OF FALL HAZARDS

(para 15.7 a))

- Workplace Survey – “A Competent Person for Fall Protection or an Aviation Fall Protection Program Manager shall conduct the workplace survey. Paragraphs 15.9.2 and 15.10.1 of this chapter provide a template and a checklist for conducting workplace surveys. The workplace survey shall encompass the aircraft and all maintenance areas (i.e. hangars, wash racks, flight line) and different access equipment that may be available in each area. The fall hazard survey shall be validated annually for comparison purposes.”

WORKPLACE SURVEY AND ASSESSMENT OF FALL HAZARDS

(para 15.7 b))

- Hazard Assessment – “Once fall hazards are identified in the workplace survey, the hazards must be assessed. OPNAVINST 3500.39 series) RM provides matrices to assess hazards based on mishap probability and severity.”

WORKPLACE SURVEY AND ASSESSMENT OF FALL HAZARDS (para 15.7 c))

Workplace Survey Report – “Identification and assessment of fall hazards in addition to comprehension of the tasks to be performed by personnel working at heights which will allow the Competent Person for Fall Protection or Program Manager to develop alternatives to mitigate fall hazards.”

Fall Related Hazards

Walking or Working on Aircraft



Higher than 4'

Aircraft Maintenance (Continued)



Tail Rotor Maintenance

Aircraft Maintenance (Continued)



Climbing
Aircraft

Aircraft Maintenance (Continued)



Prowler Maintenance

Fall Hazards (Continued)



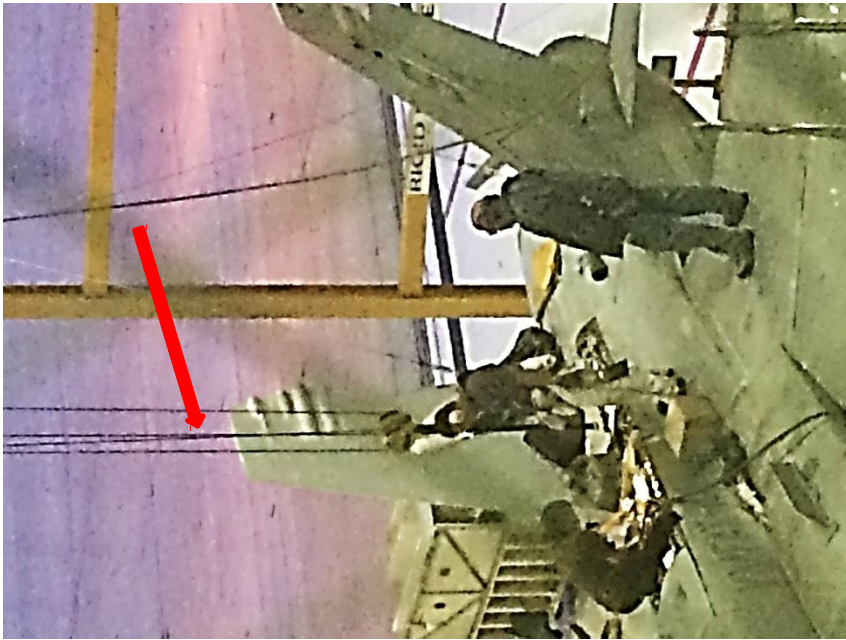
Working from Ladders



Unstable
surfaces

Lack of supervision and oversight is a common theme. Even when a system is used the extra effort is not taken to provide protection for all members performing maintenance at height, as seen in the photos below.

Two photos of the same workers, you can see that two are attached to the Self-Retracting-lanyards (SRLs) with harnesses and the third is unprotected.

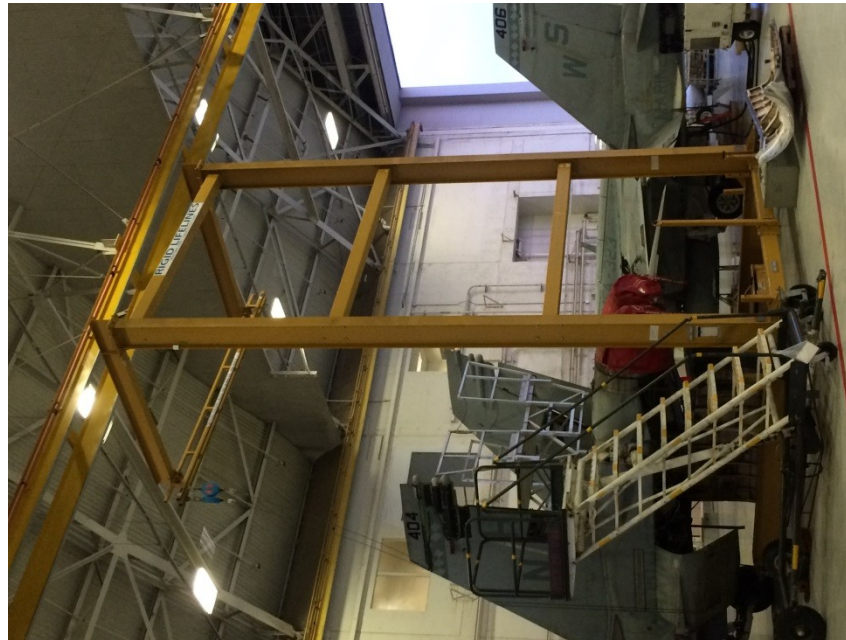


In the picture below - even with 3 stands, the Marines still would not be in the optimum position to perform their maintenance. The stand-off distance with the stand is too great. This is standard for rotor-head/vertical propeller maintenance. Unlike a normal propeller the V-22 nacelle has to be in the vertical position for this maintenance so a stand cannot simply be pushed up

B-1 Stand, even with its height is inadequate.



A rigid lifeline apparatus like the one below (possible height adjustment may be necessary) could work well for the V-22 and could be designed to be collapsible to transport to an expeditionary airfield or for use in hangar on LHD.



This unit wanted a rigid rail system but was told it was too expensive so the alternative, to allow workers to reach the entire top surface of the A/C and stay within the 15° cone for swing fall, was to install multiple stationary life lines over each spot in the hangar. Even with all of these, the system is still inadequate.

Multiple rigid life lines with self retracting lanyards.



Portable rigid rail in use to appropriately position workers for the maintenance to be performed.



AIRCRAFT FALL HAZARD PREVENTION AND CONTROLS

(para 15.9)

task identified in the workplace survey report must be mitigated with one or more of the control methods listed in Chapter 13 of OPNAVINST 5100.23 Series according to the hierarchy or preferred order of control measures for fall hazards.”

Maintenance and Inspection Work

- 1. “Personnel shall be trained to recognize the hazards of falling, fall risks at the worksite, recognition of fall-hazard deficiencies, and safe use of the equipment they are operating on including integrated features such as steps and hold points, and the selection and safe use of fall protection equipment.”**
- 2. “Designated walkways shall be identified and used wherever possible. Walkways are pre-identified paths that a person is permitted or allowed to walk on without the use of fall protection equipment.**

AIRCRAFT FALL HAZARD PREVENTION AND CONTROLS

(cont.) (para 15.9)

3. "Personnel working on aircraft surfaces should wear slip-resistant soled shoes, cranials*, and other appropriate PPE."
4. "Good housekeeping practice is paramount, and shall be enforced or implemented. Clean all aircraft surfaces immediately when hydraulic fluids, oils, and other fluids contaminate the worksite."
5. "Winds or other environmental variables such as rain, snow, frost, or ice that may preclude the safe performance of maintenance or inspection work shall be considered in the RM executed for that evolution."
6. "Where the use of fall protection equipment is not feasible (e.g., active flight line, preflight inspections); commands shall utilize RM, at a minimum, to analyze and determine alternate methods (administrative controls) to mitigate risk."

*(Cranials are not considered Head Protection)(29 CFR 1910.135)

TRAINING (para 15.8)

Training of Fall Protection Program Managers and End-users - “Training requirements for all personnel involved in the fall protection program, including personnel who may be exposed to fall hazards when performing aircraft maintenance or inspection work, are addressed in the OPNAVINST 5100.23 (series), Appendix 13-A and paragraph 6.2 of DON Fall Protection Guide. **In addition, ESAMS Course #4463 titled CNAL and CNAP Wing/Squadron Fall Protection Program Managers Training is also available. Contact your Administrative Chain of Command for possible training alternatives.”**

Mobile Work Platforms and Mobile Man Lifts



Other Aerial Work Platforms (B Stands)



Restraint System



Integrated Fall Arrest Systems - Overhead Anchor System



Portable Overhead Anchor Systems (rails)



Overhead Beam Strap with Self Retracting Lanyard



TOP FIVE ISSUES from our Aviation Safety Directorate

(identified for the Navy Fall Protection Working Group in 2015)

- **1) The *majority* of the units we visit have *no* or a cursory fall protection program. Some have as little as having the Fall Protection Guide in a binder.**
 - Lack of command program policy
 - Lack of or improper documentation of training
- **2) Multiple units, even within same TMS, are procuring their own system(s), apparatuses and gear.**
 - There is no standardization
 - Leads to additional costs, force wide
 - Requires excess training/re-training time as members change units
- **3) Service members are not receiving the same level of attention/resources as civilian contractors with regard to fall protection.**
 - Very few units without civilian contractors have fall protection systems
 - The most robust systems in use are at units with primarily contract maintenance
 - Some units are being told that the systems are for the contractors only as part of their contract and service members cannot use the equipment.

- **4) Lack of training and oversight.**
 - Where there are systems available, they are not used or are used improperly
 - This is mostly seen with service members
- **5) With 40+ NAMP Programs it is difficult to get the necessary attention paid to fall protection.**
 - Make Fall Protection a NAMP program like most other safety programs
 - Respirator use
 - Confined Space
 - Battery Safety
 - Provide guidance for all levels as the 4790.2B does for all other programs
 - Program Manager/Monitor
 - AMO/AAMO/MMCO/QAO/QA Chief/Etc.
 - Provide standardization between units of same TMS as much as possible taking into account different facility/hangar requirements.

Aviation Fall Protection Deficiencies

- The Aviation Fall Protection Program is not a functioning program. There is no ownership, no programmatic support and no funding available. Implementation has been directed, but with sporadic support at best.
- The Fall Protection Guide states “Designation of Aviation FPPM...this responsibility should be assigned to the command Safety Officer, however this position may be assigned to an E-6 or above”. There is a large difference between an E-6 and the Command Safety Officer span of effectiveness.
- The Fall Protection Guide requires more specific requirements of the aviation culture but with no standards or structure regarding proper equipment, funding for that equipment or maintenance programs to support that equipment.

Aviation Fall Protection Recommendations

- The Fall Protection Program should be incorporated into an OPNAV instruction with proper oversight. Currently the program is governed by the Fall Protection Guide which is just that, a guide.
- The responsibility for Fall Protection Program management should reside at the Type Wing/Marine MAW/MAG level for continuity. Making the “Program Manger” and “Competent Person” billets part of the staff would enable completion of required aircraft surveys that define realistic requirements and the equipment best suited to meet T/M/S and group requirements. This would eliminate every squadron running the program differently or not at all. The squadron would only require a program coordinator to enforce and monitor.
- Funding must be made available to support the requirement. If the program is developed and supported properly there should be no reason Navy and Marine Corps personnel working on aircraft should be subjected to additional risk when equipment is made available. If no funding is available, the decision must be made that the risk, as mitigated through proper ORM, is acceptable risk and the unsupported program requirement be removed.

Fall Protection Field Guide

PDF: <http://www.ready54.org/getattachment/Read-Articles/2014/May/Mental/Fall-Protection-Awareness-Week-Kicks-Off/Fall-Protection-Field-Guide-%28May-2014%29-%281%29.pdf>

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